APPENDIX

The pending claims are listed below as they would read if the amendments after final action requested herewith are entered under 37 C.F.R. § 1.116(a).

1. (Twice Amended) A composition comprising a pair of probes, said pair comprising a first and second nucleic acid probe, said first probe capable of hybridizing with an ABL nucleic acid flanking sequence, said ABL nucleic acid flanking sequence defined as a region beginning at ABL exon II and extending approximately 200 kb beyond the last ABL exon, and said second probe capable of hybridizing with a BCR nucleic acid flanking sequence, said BCR nucleic acid flanking sequence defined as a region beginning at the first exon of the major breakpoint cluster region of BCR and extending approximately 200 kb beyond BCR exon I, said flanking sequences brought together by a chromosomal aberration.

2. (Twice Amended) The composition of claim 1 wherein said first probe is capable of hybridizing with at least part of an exon in the portion of the ABL gene flanked by and including ABL exon II and the last ABL exon, and said second probe is capable of hybridizing with at least part of an exon in the portion of the BCR gene flanked by and including BCR exon I and the first exon of the major breakpoint cluster region.

3. (Twice Amended) The composition of claim 1 wherein the probes are labeled and each probe label is distinct from each other.

4. (Twice Amended) The composition of claim 3 wherein the probes hybridize to sequences that are located within approximately 800 kb of each other in the aberrant chromosome .

5. (Amended) The composition of claim 4 wherein the labels comprise fluorescent labels.

6. (Amended) The composition of claim 5 wherein the fluorescent labels are distinguishable under a microscope as different colors.

7. (Amended) The composition of claim 6 wherein the fluorescent labels comprise digoxigenin-11-dUTP and biotin-11-dUTP.

8. (Amended) The composition of claim 1 wherein the probes hybridize with chromosomal DNA *in situ* in cells.

9. (Amended) The composition of claim 8 wherein the cells comprise those in interphase of mitotic division.

10. (Amended) The composition of claim 9 wherein the probes after hybridization are juxtaposed as doublets if a chromosomal aberration is present.

11. (Twice Amended) The composition of claim 2 wherein said first probe is capable of hybridizing to at least a portion of the last exon of the ABL gene and said second probe is capable of hybridizing to at least a portion of exon I of the BCR gene.

12. (Twice Amended) The composition of claim 10 wherein the chromosomal aberration is further defined as comprising a translocation, said translocation formed by breakpoints which occur on the long arms of human chromosomes 9 and 22.

13. (Amended) The composition of claim 12 wherein the translocation breakpoints are further defined as occurring at the locations designated t(9;22) (q11;q34).

14. (Amended) The composition of claim 13 wherein the translocation breakpoints are further defined to occur in the BCR and ABL genes respectively, and a fusion gene is formed by the translocation, and said fusion gene comprises portions of the BCR and ABL genes.

15. (Twice Amended) The composition of claim 14 wherein the fusion gene encodes a protein p190.

16. (Twice Amended) The composition of claim 10 wherein the probes consist of those selected from probes PEM12, c-H-abl and MSB-1.

17. (Amended) The composition of claim 8 wherein the cells comprise a sample of human tissue.

18. (Amended) The composition of claim 17 wherein the human tissue sample comprises peripheral blood.

19. (Amended) The composition of claim 17 wherein the human tissue sample comprises bone marrow.

20. (Amended) The composition of claim 8 wherein the cells comprise a sample of cultured cells.

21. A genetic probe capable of hybridizing to the 5' region of the major breakpoint cluster region (M-bcr) of chromosome 22 as illustrated in FIG. 2A and FIG. 4.

22. (Amended) A genetic probe capable of hybridizing to the first exon of the BCR gene as illustrated in FIG. 2A.

23. (Amended) A genetic probe capable of hybridizing to at least a part of the last exon of the ABL gene, as illustrated in FIG. 5 and FIGS. 2B and 2C.

24. (Amended) The genetic probe of claim 21 wherein the probe comprises PEM12.

25. (Amended) The genetic probe of claim 22 wherein the probe comprises MSB-1.

26. (Amended) The genetic probe of claim 23 wherein the probe comprises c-H-abl.

27. (Amended) The composition of claim 1 wherein the first probe comprises c-H-abl and the second probe comprises PEM12.

28. (Amended) The composition of claim 1 wherein the first probe comprises c-H-abl and the second probe comprises MSB-1.

29. (Amended) A kit for the detection of chromosomal aberrations comprising at least two genetic probes selected from claims 21, 22 and 23, and a control, each in separate containers.

30. A kit for the detection of cancer in human cells, comprising:

a) a carrier being compartmentalized to hold multiple containers;

b) a first pair of containers including the pair of genetic probes of claims 21 and 23; and

c) a second pair of containers containing the pair of genetic probes of claims 22 and 23.

31. (Amended) The composition of claim 14 wherein the fusion gene encodes either of two proteins p190 and p210.

32. The composition of claim 31 wherein the presence of said fusion gene is diagnostic for acute lymphocytic leukemia (ALL).

33. The composition of claim 31 wherein the presence of said chromosomal aberration is diagnostic or prognostic for ALL and chronic myelogenous leukemia (CML).